REMARKS/ARGUMENTS

The Applicant has amended claims 1-21 to comply with the formalities of claims drafting and to more clearly recite the invention. Claims 22-49 have been added to more fully cover all aspects of the invention.

The abstract has been amended to correct a minor typographical error.

Claim Rejections – 35 U.S.C. §103

On pages 2-4 and 5-6 of the Office Action, the Examiner rejected claims 1 and 7 under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 4,809,202 (hereinafter referred to as Wolfram) in view of Kevin Sahr et al., "Geodesic Discrete Global Grid Systems", Cartography and Geographic Information Science, Vol. 30, No. 2, April 2003, pp. 121-134 (hereinafter referred to as Sahr). The Applicant respectfully disagrees.

Amended independent claim 1 of the present application discloses a method for storing two-dimensional spatially organized data in one dimensional space on a computer storage medium by mapping the attributes of a continuous state planar space to a multi-resolutional tessellation of close packed uniform cells. Each cell is uniquely identified with a sequential number including the identification of a parent cell.

Amended independent claim 7 of the present application discloses a discrete global grid system including a system memory which comprises spatially organized data as a multi-resolutional tessellation of close-packed uniform hexagonal cells. Again, each cell is uniquely identified with a sequential number including the identification of a parent cell.

New independent claim 22 of the present application discloses a method of storing two-dimensional data as a series of tessellations of uniform hexagonal cells using a unique index for each cell. The indexes of each cell not in the lowest resolution tessellation comprise the index of a parent cell from the tessellation of next lowest resolution.

New independent claim 36 of the present application discloses a grid system including a system memory which comprises a series of tessellations of uniform hexagonal cells using a unique index for each cell. The indexes of each cell not in the lowest resolution tessellation comprise the index of a parent cell from the tessellation of next lowest resolution.

Thus, all of the independent claims of the present application disclose tessellations of cells which are uniquely identified using an index which includes the identification of a parent cell.

In contrast, Wolfram discloses a method and an apparatus for using cellular automata to simulate systems described by partial differential equations. In Wolfram, a two-dimensional space is tessellated into a cellular array of regular hexagons. The cell values are stored at different memory addresses in an order which represents the hexagonal array. In particular, memory addresses are assigned in consecutive number order in a raster pattern starting with the cell in the upper left hand corner of the two-dimensional space, followed by the cell immediately to its right on the horizontal or 0-axis, and so forth to the upper right hand corner, then to the cell on the left hand side on the row immediately below the first row, the cell immediately to its right and so forth to the cell on the bottom row at the lower right hand corner of the array (Wolfram, column 8, lines 49-58).

The structure defined in Wolfram includes only one level of cell tessellations. As such, Wolfram does not include the concept of a parent cell as disclosed in the series of hexagonal cell tessellations of the present application. Accordingly, the numbering system for the cells disclosed in Wolfram is not based in any way on the index of a parent cell, as is claimed in the independent claims of the present application.

Sahr presents ideas for optimized cellular partitioning of the Earth surface as a Discrete Global Grid System. Sahr discusses various data structures for global geo-referenced data sets including regular hierarchies of incongruent, aligned hexagon discrete grids as

is discussed in the present application. However, Sahr does not discuss any methods of indexing the cells of such a structure. In fact, the author suggests that there is a need for more research to be done in this area. In particular, in the first column of page 133 of Sahr, the author states:

> "Hexagon-based Geodesic DGGs, which have clear advantages for many end-users, remain largely ignored. A significant effort must be made by the data structures community to develop and evaluate algorithms for regular, but non-tree, hierarchies they form."

Thus, Sahr acknowledges that there is been a lack of achievement relating to this type of structure. This further suggests that the indexing method disclosed in the independent claims of the present application is not obvious in view of the prior art and, in fact, fulfills an unmet need in the area.

As neither reference discloses, or even suggests, an indexing system such as the one claimed in claims 1, 7, 22, and 36, it is respectfully submitted that these claims are not obvious in view of the prior art. For at least the reason that the remaining claims in the present application depend either directly or indirectly from one of claims 1, 7, 22, or 36, the Applicant respectfully submits that these remaining claims should also be allowed.

In view of the foregoing clarifications, Applicants respectfully submit that each of claims 1-49 is in form for allowance. Should there be any remaining issues after this amendment, the Examiner is kindly invited to call the undersigned.

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The applicant respectfully requests that a timely notice of allowance be issued in this case.

Respectfully submitted,

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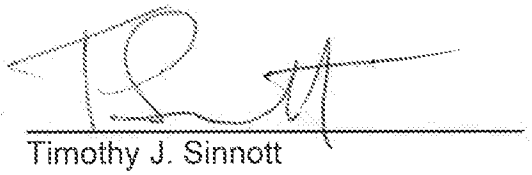

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